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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,864	09/08/2005	Manfred Ratzsch	4385-045796	9009

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THE WEBB LAW FIRM, P.C.
700 KOPPERS BUILDING
436 SEVENTH AVENUE
PITTSBURGH, PA 15219

EXAMINER	
HEINCER, LIAM J	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/517,864	RATZSCH ET AL.	
	Examiner	Art Unit	
	Liam J. Heincer	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2008*.

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 16, 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22-24, 32-34 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek (US Pat. 5,206,066) in view of Michel et al. (US Pat. 4,081,426).

Considering Claims 22 and 23: Horacek teaches a melamine resin (1:1-5) comprising an etherified melamine resin (1:59-63) that have been etherified with C_{1-4} alkanols/R_3 (2:1-2) and reacted (3:11-15) with polyether diols, that can be polytetrahydrofuran-diol, polypropylene glycol, ethylene glycol, proplylene glycol, or dipropylene glycol/bridging units of the formula -NH-CHR_2-O-R_4-O-CHR_2-NH- (1:64-68), wherein the molar ratio of the substituents R_3:R_4 are 20:1 to 1:20 (1:45-55), the proportion of the combination of the triazine segments through the polyethers is from 5 to 95 mole% (1:50-55).

Horacek does not teach the molar ratio of melamine to formaldehyde as being from 1:2.5-3.5. However, Michel et al. teaches a melamine resin with a ratio of melamine to formaladehyde of 1:0.77 to 3.0 moles (1:63-67). Horacek and Michel et al. are analogous art as they are concernd with the same field of endeavor, namely etherified aminoplast resins. It would have been obvious to a person having ordinary skill in the art at the time of invention to have used the ratio of Michel et al. in the resin of Horacek, and the motivation to do so would have been, as Michel et al. suggests, to control the degree of condensation in the reaction resin (1:63-2:10).

Horacek is silent towards the molecular weight of the resin. However, as Horacek teaches fully curing a melamine resin precondensate with polyether diols, as in the current invention, it would appear to provide the claimed molecular weight. As the PTO lab does not posses a laboratory, the burden is on the applicant to show that the process of modified Horacek would not result in a product possessing the claimed number of triazine units.

Considering Claim 24: Horacek teaches using formaldedhyde to produce the melamine resin/R_2 is H (1:45-49).

Considering Claim 32: Horacek also teaches making a laminate from the composition (3:55-57).

Considering Claims 33 and 34: Horacek teaches a prepeg/semi-finished product produced from fibers (3:27-32) that can be used in films/coatings (1:11-17).

Considering Claim 38: Horacek teaches fiber reinforcement that are glass, carbon or aramid fibers (3:16-20).

Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek (US Pat. 5,206,066) as applied to claim 33 above, and further in view of Recker et al. (US Pat. 4,336,180) as evidenced by Kloeppel, Synthetic Molecular Sieves Binds Water Better than Zeolites.

Considering Claims 35-37: Horacek teaches the product of claim 1 as stated above.

Horacek does not teach adding a molecular sieve to the product. However, Recker et al. teaches forming a resin in the presence of a molecular sieve (3:18-19). Horacek and Recker et al. are analogous art as they are concerned with the same field of endeavor, namely resins. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used molecular sieving in the product of Horacek as in Recker et al., and the motivation to do so would have been, as evidenced by Kloeppel, to absorb moisture from the etherification reaction (¶2).

Claims 25, 26, and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek (US Pat. 5,206,066) in view of Ruawendaal, (Extrusion, Enc. Of Polymer Science and Technology), Williams (Amino Resins, Enc. Of Polymer Science and Technology) and Michel et al. (US Pat. 4,081,426) .

Considering Claim 25: Horacek teaches reacting a melamine formaldehyde resin that has been etherfied with C_{1-4} alcohol/C_{1-4}-oxa-C_1-alkylene amino substituted triazine (1:59-63 and 2:1-2) with a diol mixture with up to 75% C_{2-12} diols and polyether diols (1:64-68) at 60°C and 1 atm (Example 1), where the amino groups are used in weight percent of 4:3 of the diols/~4:3 mol percent (Example 1), then further reacting the mixture for 5 minutes at 120 °C (Example 1). Horacek also teaches further heating the resin at 150 °C for 30 minutes (Example 1).

Horacek does not teach the heating at 150 °C as occurring for the 2 to 12 minutes. However, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2144.05. As the curing time would alter the amount of crosslinking of the final product, a person having ordinary skill in the art at the time of invention would have considered the curing

time to be a result effective variable. As such, it would have been obvious to a person having ordinary skill in the art at the time of invention to have optimized the curing time through routine optimization, and the motivation to do so would have been to control the crosslinking and flexibility of the final product.

Horacek does not teach degassing the composition. However, Rauwendaal teaches degassing a polymer composition (Section 10).. Horacek and Rauwendaal are analogous art as they are concerned with the same field of endeavor, namely polymer processing. It would have been obvious to a person having ordinary skill in the art at the time of invention to have degassed the composition of Horacek as in Rauwendaal, and the motivation to do so would have been, as Rauwendaal suggests, to remove volatile components that can create voids in the final product (Section 10).

Horacek does not teach granulating the composition. However, Williams teaches granulating an amino resin molding composition (Section 6). Horacek and Williams are analogous art as they are concerned with the same field of endeavor, namely amino resin compositions. It would have been obvious to a person having ordinary skill in the art at the time of invention to have granulated the composition of Horacek as in Williams, and the motivation to do so would have been, as Williams suggests, to provide a product that is easier to handle (Section 6).

Horacek does not teach the method of making the etherified precondensate. However, Michel et al. teaches forming an etherified precondensate of melamine and formaldehyde by heating to from 85 to 115 °C at a pressure of greater than 1.5 atm/bar (2:22-35) a mixture of a melamine formaldehyde condensate and methanol (1:63-2:21) in the presence of weakly acidic medium (2:36-54). Michel et al. also teaches conditioning the condensate at 110 °C for 12 minutes at 3.5 atm (Example 1). It would have been obvious to a person having ordinary skill in the art at the time of invention to have used the method of making the condensate of Michel et al. in the process of Horacek, and the motivation to do so would have been, as Michel et al. suggests, the desired product can be made in a short reaction time (2:61-63).

Horacek does not teach the conditioning as occurring at the claimed temperature. However, changes in temperature will not generally support patentability. It would

have been obvious to a person having ordinary skill in the art at the time of invention to have optimized the temperature of the reaction through routine optimization, and the motivation to do so would have been to increase the reaction rate and degree of condensation of the precondensate. See MPEP 2144.05.

Considering Claim 26: Horacek teaches using an organic acid as a catalyst (3:11-15).

Considering Claim 28: Horacek also teaches using an organic acid as a catalyst (3:11-15).

Considering Claim 29: Horacek teaches the prepeg as being formed at temperatures between 80 to 150 °C (3:39-46). This range overlaps the claimed range of 150 to 250 °C. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). See MPEP § 2144.05.

Considering Claim 30: Horacek teaches using different initial products in the condensation (2:26-42).

Considering Claim 31: Horacek does not teach the process as taking place in a single reaction instillation. However, Williams teaches making an amino resin in a single unit (Section 4). Horacek and Williams are analogous art as they are concerned with the same field of endeavor, namely amino resins. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used a single reaction instillation in the process of Horacek as in Williams, and the motivation to do so would have been, as Williams suggests, it is a functional alternative to non continuous processes (Section 4).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek (US Pat. 5,206,066) in view of Ruawendaal, (Extrusion, Enc. Of Polymer Science and Technology), Williams (Amino Resins, Enc. Of Polymer Science and Technology) and Michel et al. (US Pat. 4,081,426) as applied to claim 25 above, and further in view of Recker et al. (US Pat. 4,336,180) as evidenced by Kloeppel, Synthetic Molecular Sieves Binds Water Better than Zeolites.

Considering Claim 27: Horacek, Ruawendaal, Williams, and Michel et al. collectively teach the method of claim 25 as shown above.

Horacek does not teach adding a molecular sieve to the process. However, Recker et al. teaches forming a resin in the presence of a molecular sieve (3:18-19). Horacek and Recker et al. are analogous art as they are concerned with the same field of endeavor, namely resins. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used molecular sieving in the method of Horacek as in Recker et al., and the motivation to do so would have been, as evidenced by Kloeppel, to absorb moisture from the etherification reaction (¶2). Also, although Recker does not explicitly teach the amount of molecular sieving as being in the claimed range, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have optimized the range to achieve the best results. See MPEP § 2144.05.

Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek, (US Pat. 5,206,066) in view of Goldsworthy et al. Composites, Fabrication.
Considering Claim 39: Horacek teaches a amino resin molding composition (3:46-48) comprising polytriazine ethers (1:6) comprising traizine segments that have been partly etherified with alkanols/R_3 (2:7-13) and polyether diols/R_4 (2:40-42) where the triazines are combined through bridging members that are polyethers/-NH-CHR_2-O-R_4-O-CHR_2-NH- (2:40-42), or formaldehyde/-NH-CHR_2-NH- (2:7-11), wherein the molar ratio of the substituents R_3:R_4 are 20:1 to 1:20 (1:45-55), the proportion of the combination of the triazine segments through the polyethers is from 5 to 95 mole% (1:50-55). Although the number of nuclei is not explicitly taught, the weight percentages could easily be manipulated to give the desired numbers. Horacek also teaches melt impregnenting of fibers (3:27-32) at mass temperatures of 100 to 200°C (3:39-46). Horacek also teaches melt impregnating component blanks (3:27-32)

Horacek does not teach the heating at 150 °C as occurring for the 2 to 12 minutes. However, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In*

re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2144.05. As the curing time would alter the amount of crosslinking of the final product, a person having ordinary skill in the art at the time of invention would have considered the curing time to be a result effective variable. As such, it would have been obvious to a person having ordinary skill in the art at the time of invention to have optimized the curing time through routine optimization, and the motivation to do so would have been to control the crosslinking and flexibility of the final product.

Horacek does not teach the melt impregnating as being preformed according to one of the claimed techniques. However, Goldsworthy et al. teaches making a product through pultrusion (Section 3.1). Horacek and Goldsworthy et al. are analogous art as they are concerned with the same field of endeavor, namely composite production. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the pultrusion of Goldworthy et al. in the process of Horacek, and the motivation to do so would have been, as Goldworthy et al. suggests, to make the articles in a one step process (Section 3.1).

Considering Claim 41: Horacek teaches the polytriazine ethers being made from a formaldehyde condensation/R_2=H (2:7-15).

Considering Claim 42: Horacek teaches using p-toluene-sulphonic acid as a hardening agent (3:11-15).

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek, (US Pat. 5,206,066) in view of Goldsworthy et al. Composites, Fabrication. as applied to claim 39 above, and further in view of Yagi et al. (US Pat. 5,624,627), Getchell et al. (US Pat. 3,982,410) and Marco et al. (US Pat. 5,856,313).

Considering Claim 43: Horacek and Goldsworthy et al. collectively teach the process of claim 39 as claimed above.

Horacek does not teach mixing the melt with a dispersion agent. However, Yagi et al teaches mixing a resin and a paraffin oil (10:10-13) in a melt kneader at a temperature of 160 to 220°C (10:37-47). Horacek and Yagi et al. are analogous art as they are concerned with the same field of endeavor, namely resin production. It would

have been obvious to a person having ordinary skill in the art at the time of the invention to have mixed a dispersion agent into the resin as in Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to increase the processability of the resin (1:51-64).

Horacek does not teach treating the resin with an acid gas. However, Getchell et al. teaches treating a polymer fiber mixture with an acid gas (10:50-54). Horacek and Getchell are analogous art as they are concerned with the same technical difficulty, namely impregnating fibers. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the acid gas of Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to fix the polymer in the fiber (9:47-50).

Horacek does not teach the mixture as being conveyed through a sieve separator. However, Marco et al. teaches putting a fiber through a sieve separator (2:12-16). Horacek and Marco et al. are analogous art as they are concerned with the same technical difficulty, namely the manufacture of fibers. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the sieve separation step of Marco et al. in the process of Horacek, and the motivation to do so would have been, as Marco et al. suggests, to obtain fibers of the desired size (2:16-17).

Horacek does not teach extracting the dispersion agent. However, Yagi et al. teaches extracting a plasticizer/dispersion agent with low boiling hydrocarbons (11:10-20). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the extraction step of Yagi et al. in the process of Horacek, and the motivation to do so would have been, as Yagi et al. suggests, to create a product of high tensile strength (3:47-60).

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horacek (US 5,206,066) in view of Michel et al. (US Pat. 4,081,426). as applied to claim 33 above, and further in view of Goldsworthy et al. Composites, Fabrication.
Considering Claim 44: Horacek teaches the composition of claim 33 as stated above.

Horacek does not teach making a product as claimed from the composition. However, Goldworthy et al. teaches making a foamed container from a composite material (Section 3.6.3). Horacek and Goldsworthy et al. are analogous art as they are concerned with the same field of endeavor, namely composite production. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made a conatainer from the composition of Horacek as in Goldworthy et al. and the motivation to do so would have been, as Goldworthy suggests, to give an insulated container for transportation (Section 3.6.3).

Response to Amendment

The declaration under 37 CFR 1.132 filed November 14, 2008 is insufficient to overcome the rejection of claims 22-44 based upon Horacek (US Pat. 5,206,066) as set forth in the last Office action because:

A) Applicants assertion that Horacek only teaches a mixture of the melamine and the diol is not persuasive. Horacek explicitly teaches that melamine resins and diols react (3:11-15). As the applicant has only presented arguments in the declaration rather than experimental data the disclosure of Horacek is considered to be enabled. When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability. *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). See MPEP § 2121 and § 716.07. Applicants argument is not sufficient to rebut the teaching of Horacek that the diol and melamine resins react.

B) Although the applicants arguments that the heating step of Horacek at 60°C will not cause the evaporation of methanol, and thus the equilibrium will not advance significantly, the argument seems to ignore the further steps of the example of Horacek. Following the disclosed step at 60°C, Horacek teaches two further heating steps meeting the disclosed temperatures of the second and third heating steps of the instant invention (see pg. 4 of declaration). Further the applicant has relied on the viscosity prior to the two additional heating steps to show that the resins of Horacek and the instant

invention are materially different (see pg. 3 of declaration). However the further heating steps would increase the crosslinking between the melamine components, and thus increase the viscosity. As such, the applicant has not met the burden of showing that the final product of Horacek and the resin of the instant invention are materially different.

Response to Arguments

Applicant's arguments filed November 14, 2006 have been fully considered but they are not persuasive, because:

A) Applicants arguments that Horacek and the secondary references do not teach the high molecular weight have been substantially discussed in the response to the declaration above. The response will not be repeated here.

Applicants arguments regarding D'Alelio are persuasive (See pg. 17). As such the reference has been removed from the rejection.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Liam J. Heincer whose telephone number is 571-270-3297. The examiner can normally be reached on Monday thru Friday 7:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

LJH
February 23, 2009